



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,203	03/25/2004	Toshimitsu Hirai	9319S-000716	5989
27572 7590 05/22/2007 HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			EXAMINER KIM, SU C	
			ART UNIT 2823	PAPER NUMBER
			MAIL DATE 05/22/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/809,203	Applicant(s) HIRAI, TOSHIMITSU	
	Examiner Su C. Kim	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5,9,10,13-15,17 and 18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5,9,10,13-15,17 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 & 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Kamishiro Kazuhiro (JP 2000-243254) ('hereafter Kamishro').

Pertaining claims 1, Kamishro discloses a method for manufacturing electron emitters by providing pairs of element electrodes, and conductive layers (Drawing 3(h), 2 & 3) connecting the element electrodes (Drawing 3(h), 5) to each other on a substrate (Drawing 2(a), 1), the method comprising:

a step of forming banks (Drawing 2(a)-(c), 34) surrounding electrode-forming regions for forming the element electrodes (Drawing 3(h), 2 & 3) and conductive layer-forming regions 4 for forming the conductive (Drawing. 2 & 3)

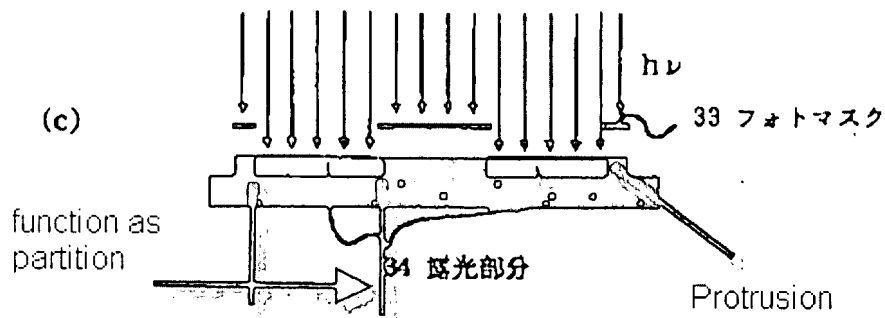
a step of discharging first droplets toward the electrode-forming regions (Drawing 2 (a)-2(e));

and a step of discharging second droplets toward the conductive layer-forming regions (Drawing 3-(g)); and

a step of removing bank(Drawing 3(g)-3(i))

a step of lyophilizing at least one of the electrode-forming region and the conductive-layer forming region(Paragraph 0015 & 0021, "while making hydrophilic property of an optical exposure part (bank)" is consider as lyophilizing step)

wherein the bank (Drawing 2(a)-(c), 34) consist of protrusion portions which function as partitions (Drawing 2(c), paragraph 0024, note: the bank is formed with protrusion portions by photolithography technique with etching process which function as partitions).



Pertaining claim 5, as applied to claim 1, Kamishiro discloses an electron emitter manufactured by the method according to claim 1. (See the rejection on claim 1)

3. Claims 2, 3, 9, 10, 13, 14, 15, &17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamishiro Kazuhiro (JP 2000-243254) in view of Yudasaka (US 6476988)

Pertaining claims 2 & 3, as applied to claim 1 above, Kamishiro discloses all the limitations include, electron emitters.

However, Kamishro fails to teach a step of lyophobic the bank or the banks are formed using a lyophobic material.

Yudasaka discloses forming banks with surface treatment to create repellent by irradiating ultraviolet layer (Fig. 10A-B, Column 1, lines 56-63)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant(s) claimed invention is made to provide Kamishro reference with a step of lyophobic the bank or the banks are formed using a lyophobic material taught by Yudasaka in order to produce reliable device.

Pertaining claim 9, Kamishro discloses a method for manufacturing an electron emitter comprising:

defining a pair of spaced apart electrode (Drawing 3(i), 2 & 3) forming regions on a substrate (Drawing 2 (c)-(d));

defining a conductive layer-forming region on the substrate, the conductive layer 4 forming region interconnecting the electrode-forming regions (Drawing 3 (h));

forming a bank (Drawing 2(c), 32) encircling the electrode-forming regions and the conductive layer forming region (Drawing 2(c)) ;

discharging first droplets (Drawing 2(d), 35) toward the electrode-forming regions to form a pair of element electrodes (Fig. 2 (e)); and

discharging second droplets (Drawing 3(g), 37) toward the conductive layer-forming regions to form a conductive layer connecting the element electrodes to each other (Drawing 3(g)); and

removing the bank after the conductive layer and element electrodes are formed (Drawing 3(f)-(i) and details on paragraph 2 above).

wherein the bank (Drawing 2(a)-(c), 34) consist of protrusion portions which function as partitions (Drawing 2(c), paragraph 0024, note: the bank is formed with protrusion portions by photolithography technique with etching process which function as partitions).

Kamishiro fails to teach rendering the bank lyophobic

Yudasaka discloses forming banks with surface treatment to create repellent by irradiating ultraviolet layer (Fig. 10A-B, Column 1, lines 56-63)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant(s) claimed invention is made to provide Kamishiro reference with rendering the bank lyophobic taught by Yudasaka in order to produce reliable device.

Pertaining claim 10, as applied to claim 9 above, Kamishiro and Yudasaka in combination disclose all the limitations include, treating a portion of the conductive layer (Kamishiro Drawing 3(g), 4) to form an electron-emitting section (Drawing 3(g), 5).

Pertaining claim 13, as applied to claim 9 above, Kamishiro and Yudasaka in combination disclose all the limitations include, the electrode-forming region (Kamishiro, Fig. 2c-d, 34); and the conductive layer-forming region (Kamishiro, Fig. 5, 5, 4); lyophilic (Kamishiro, hydrophilic property of an optical exposure part (paragraph 21))

Pertaining claims 14 & 17, Kamishiro discloses a method for manufacturing electron emitters by providing pairs of element electrodes, and conductive layers

Art Unit: 2823

(Drawing 3(h), 2 & 3) connecting the element electrodes (Drawing 3(h), 5) to each other on a substrate (Drawing 2(a), 1), the method comprising:

a step of forming banks (Drawing 2(a)-(c), 34) surrounding electrode-forming regions for forming the element electrodes (Drawing 3(h), 2 & 3) and conductive layer-forming regions 4 for forming the conductive (Drawing. 2 & 3)

a step of discharging first droplets toward the electrode-forming regions (Drawing 2 (a)-2(e));

and a step of discharging second droplets toward the conductive layer-forming regions (Drawing 3-(g)).

wherein the bank (Drawing 2(a)-(c), 34) consist of protrusion portions which function as partitions (Drawing 2(c), paragraph 0024, note: the bank is formed with protrusion portions by photolithography technique with etching process which function as partitions).

Kamishiro fails to teach rendering the bank lyophobic

Yudasaka discloses forming banks with surface treatment to create repellent by irradiating ultraviolet layer (Fig. 10A-B, Column 1, lines 56-63)

Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant(s) claimed invention is made to provide Kamishiro reference with rendering the bank lyophobic taught by Yudasaka in order to produce reliable device.

Pertaining claim 15, as applied to claim 14 above, Kamishiro and Yudasaka in combination disclose all the limitations includes, the banks are formed using a lyophobic

Art Unit: 2823

material (column 4, line 53-57, non-affinity material is considered as lyophobic material which create repelling force to in-jet drop resin after the surface treatment.)

4. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kamishiro Kazuhiro (JP 2000-243254) in view of Morii (US20040242111).

Pertaining claim 18, as applied to claim 1, Kamishiro discloses the lyophilizing step.

Kamishiro fails to teach the lyophilizing step includes using an O₂ plasma process to lyophilize at least one of the electrode-forming region and the conductive-layer forming region.

Morii discloses lyophilic by plasma treatment using oxygen (paragraph 0100)

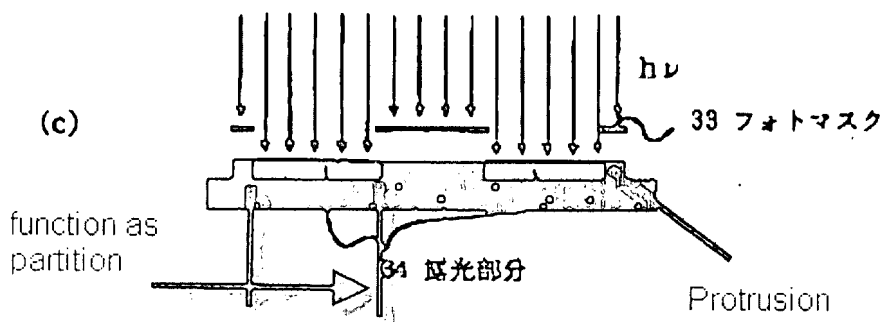
Therefore, it would have been obvious to one of ordinary skill in the art at the time of applicant(s) claimed invention was made to provide Kamishiro with the lyophilizing step includes using an O₂ plasma process to lyophilize at least one of the electrode-forming region and the conductive-layer forming region as taught by Morii in order to produce strong bonding attraction.

Response to Arguments

5. With respect to claims rejection under 35 U.S.C. 102(b), applicant argues that Kazuhiro does not anticipate "the banks according to the claim invention act as partitions"

In response to applicant's contention, it is respectfully submitted that **Kazuhiro** discloses all the claimed limitation including the bank consist of protrusion portions which function as partitions as claimed in claims 1, 9, & 14 below.

Kazuhiro appears to show, see Drawing 2 (c), the bank (Drawing 2(a)-(c), 34) consist of protrusion portions which function as partitions (Drawing 2(c), paragraph 0024, note: the bank is formed with protrusion portions by photolithography technique with etching process which function as partitions).



Therefore, the rejection of claims 1 and 5 under 35 U.S.C. 102(b) is deemed proper.

Also, the rejection of claims 2, 3, 9, 10, 13, 14, 15 and 17 under 35 U.S.C 103(a) are deemed proper as at least the reason above and the *prima facie* case of obviousness have been met and the rejection under 35 U.S.C. § 103 is deemed proper.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

Art Unit: 2823

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

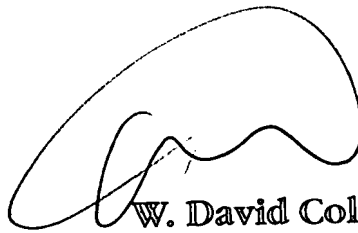
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Su C. Kim whose telephone number is (571) 272-5972. The examiner can normally be reached on Monday - Thursday, 9:00AM to 7:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Su C. Kim (5/17/2007)



W. David Coleman
Primary Examiner